

## How Cal-Arch Ranks Building Energy Use

California building owners have no easy way to determine how their buildings' energy use compares to others. They need this information to help them make informed decisions to decrease building energy use. This project developed a web-based benchmarking tool, called Cal-Arch, for commercial buildings that helps Californians understand how their buildings rate in energy use. The free tool is available on-line at <http://poet.lbl.gov/cal-arch>.

Cal-Arch is the only tool that uses California's Commercial End Use Survey (CEUS) data, which is more relevant to California buildings.

### Cal-Arch Building Types

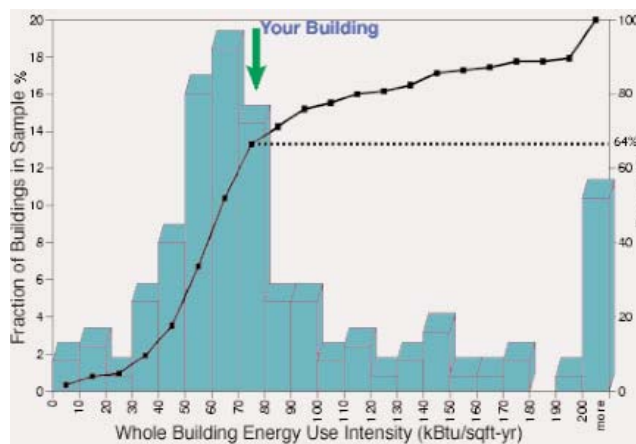
Agricultural	Nursing Home
Education (All and K-12 Only)	Office/Professional
Enclosed Shopping/ Mall	Other (Unknown)
Food Sales	Public Assembly
Food Services (Restaurant)	Religious Worship
Health Care (Inpatient)	Retail (Except mall)
Health Care (Outpatient)	Warehouse (Non-refrigerated)
Industrial Processing/Mfr	Warehouse (Refrigerated)
Lodging (Hotel/Motel/Dorm)	

## What Does Cal-Arch Do?

The Cal-Arch software asks the user information such as their building type, ZIP code, floor area, and annual energy consumption. With a simple query, Cal-Arch returns a distribution of energy use intensities (EUI), or the energy used by one square foot of a building per year. A typical histogram is shown in Figure 1.

Information is provided to help interpret the results, explain the data sources, and link to other benchmarking tools.

*Histogram of building energy use intensity. The height of the bars (left scale) is the fraction of buildings with a certain EUI value. The connected points (right scale) are the cumulative fraction of buildings with an EUI below a given value. The office building in this example uses more total energy (gas and electricity) than 64% of comparable California office buildings.*



## So, Is My Building Efficient?

Commercial buildings account for nearly one-third of all electricity and natural gas used in California. This tool is intended to be a starting point in assessing energy savings potential. It provides you with a direct comparison to actual data from real California buildings.

The results can be used by

- building owners
- energy managers
- control companies
- energy information system vendors
- utilities
- energy service companies
- performance contractors, researchers, and analysts.



If existing commercial building owners and operators in California used Cal-Arch to evaluate their energy use and take action, large energy savings could result.

- First year savings would reach 11 GWh if 0.5% of all buildings used the tool to reduce their energy use by 2.5%.
- Ten-year cumulative savings would reach 630 GWh, if the market penetration increased by 0.5% per year.

## INTERESTED?

**Control companies, energy information system vendors, and utilities** can use the Cal-Arch database to provide additional services to their customers.

**Energy Service Companies (ESCOs) and performance contractors** can use benchmarking information to communicate energy savings potential to their clients.

**Energy managers and building owners** have an ongoing interest in seeing how they compare to others.

**Researchers and analysts** can use the tool to view distributions of energy use across different populations.

Additional information can be found on this website:  
<http://poet.lbl.gov/cal-arch/>

Technical reports about Cal-Arch are at:  
<http://buildings.lbl.gov/hpcbs/Pubs.html>

Information about the databases used in Cal-Arch are at:  
<http://poet.lbl.gov/cal-arch/ceus.html>

This project is part of LBNL's High-Performance Commercial Building Systems program, a three-year public-private research initiative targeting substantial reductions in the energy costs of commercial buildings.

For access to all program results, see:  
<http://buildings.lbl.gov/hpcbs>



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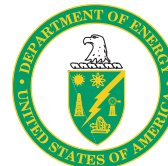
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# Cal-Arch



## WEB-BASED ENERGY BENCHMARKING

